

## WHAT IS CLAIMED IS:

- 1 1. A downhole connector assembly for sealingly attaching a first and a second  
2 segment of a control line having a communication line therein, comprising:  
3 at least one weld coupling; and  
4 at least one thermal insulator, said thermal insulator located between the  
5 communication line and the weld coupling.
- 1 2. The downhole connector assembly of claim 1, further comprising a protective  
2 housing containing the at least one weld coupling therein.
- 1 3. The downhole connector assembly of claim 1, wherein the protective housing is  
2 filled with an epoxy.
- 1 4. The downhole connector assembly of claim 1, wherein the protective housing is  
2 filled with a gel.
- 1 5. The downhole connector assembly of claim 2, wherein the protective housing  
2 further comprises a port adapted for pressure testing the downhole connector  
3 assembly.
- 1 6. A protective splice assembly, comprising:  
2 a first cable having an outer housing and a communication line therein;  
3 a second cable having an outer housing and a communication line therein;  
4 a spliced connection between the communication lines of the first and second  
5 cables;  
6 at least one weld coupling located between the outer housings and the  
7 communication lines welded to the first and second cables; and  
8 at least one thermal insulator of the first and second cables.
- 1 7. The protective splice assembly of claim 6, adapted for downhole application.
- 1 8. The protective splice assembly of claim 6, wherein the outer housing is comprised  
2 of a metallic material.
- 1 9. The protective splice assembly of claim 6, wherein the outer housing is comprised  
2 of a steel alloy.

- 1 10. The protective splice assembly of claim 6, wherein the communication line  
2 transfers data.
- 1 11. The protective splice assembly of claim 6, wherein the communication line  
2 transfers power.
- 1 12. The protective splice assembly of claim 6, wherein the communication line is an  
2 electrical line.
- 1 13. The protective splice assembly of claim 6, wherein the communication line is a  
2 fiber optic line.
- 1 14. The protective splice assembly of claim 6, wherein the at least one weld coupling  
2 is welded with an orbital welder.
- 1 15. The protective splice assembly of claim 6, further comprising a secondary  
2 housing located within the outer housing.
- 1 16. The protective splice assembly of claim 15, wherein the secondary housing  
2 comprises a polymeric material.
- 1 17. The protective splice assembly of claim 15, wherein the communication lines  
2 extend therethrough the secondary housing.
- 1 18. The protective splice assembly of claim 15, wherein the at least one thermal  
2 insulator is located between the secondary housing and the outer housing.
- 1 19. The protective splice assembly of claim 6, further comprising a pressure housing  
2 secured to the first and second cables such that the at least one weld coupling is  
3 isolated from the surrounding environment.
- 1 20. The protective splice assembly of claim 19, wherein the pressure housing is  
2 secured by welding.
- 1 21. The protective splice assembly of claim 19, wherein the pressure housing is  
2 secured by ferrules.
- 1 22. The protective splice assembly of claim 19, wherein the pressure housing is  
2 secured by elastomeric seals.

- 1 23. The protective splice assembly of claim 19, wherein the pressure housing further  
2 comprises a port adapted for pressure testing.
- 1 24. The protective splice assembly of claim 19, wherein the pressure housing is filled  
2 with a gel.
- 1 25. The protective splice assembly of claim 19, wherein the pressure housing is filled  
2 with an epoxy.
- 1 26. A downhole connector assembly for sealingly attaching a first and a second  
2 segment of a control line having a communication line therein, comprising:  
3 at least one weld coupling; and  
4 means for thermally protecting the communication line, said means located  
5 between the communication line and the weld coupling.
- 1 27. A method for providing a downhole control line, comprising:  
2 providing a first and a second segment of a control line having a communication  
3 line therein;  
4 providing a weld coupling;  
5 inserting the first and second segments of the control line into the weld coupling  
6 and welding the segments in place; and  
7 providing at least one thermal insulator between the weld coupling and the  
8 communication line of the first and second segments.